1. A method of depositing at least one dielectric layer simultaneously on facets of an optical device in which light travels horizontally, comprising the steps of:

a) selecting a substrate;

b) forming an optical device on the substrate, where the optical device includes at least one active layer in which photon emission is stimulated;

c) forming an active-layer pump structure on the optical device;

d) forming a plurality of facets in the optical device, where the plurality of facets include at least two different orientations; and

e) coating a user-definable number of dielectric layers simultaneously onto the plurality of facets in at least two different orientation.

2. The method of claim 1, wherein the step of selecting a substrate is comprised of the step of selecting a substrate from the group of substrates consisting of sapphire, GaAs, GaSb, InAs, InP, InSb, and quartz.

3. The method of claim 1, wherein the step of selecting a substrate is comprised of the step of selecting a substrate from the group of substrates consisting of undoped substrate, doped substrate, doped n+ substrate, doped p+ substrate, and semi-insulating substrate.

4. The method of claim 1, wherein the step of forming an optical device of the substrate is comprised of the step of forming an optical device on the substrate selected from the group of optical devices consisting of a PN junction of direct gap semiconductors, a PIN structure with

direct gap semiconductor quantum wells, a graded index structure with direct gap semiconductor quantum wells, and Er doped glass layers.

5. The method of claim 1, wherein the step of forming an optical device on the substrate is comprised of the step of forming an optical device in the form selected from the group of optical device forms consisting of a ridge, a buried heterostructure, a polygonal mesa, a ring, and a Y-structure.

6. The method of claim 1, wherein the step of forming an active-layer pump structure on the optical device is comprised of the step of forming an active-layer pump structure selected from the group of active-layer pump structures consisting of a physical contact and an optical window.

7. The method of claim 1, wherein the step of forming a plurality of facets in the optical device is comprised of etching facets in a method selected from the group of etching methods consisting of Inductively Coupled Plasma (ICP), Reactive Ion Etching (RIE), Chemically Assisted Ion Beam Etching (CAIBE), and anisotropic wet etching.

8. The method of claim1, wherein the step of coating a user-definable number of dielectric layers simultaneously onto the plurality of facets in at least two different orientations is comprised of the step of coating a user-definable number of dielectric layers onto the plurality of facets in at least two different orientations in a method selected from the group of

coating methods consisting of Plasma Enhanced Chemical Vapor Deposition (PECVD), plasma assisted sputtering, and thermal planetary evaporation.

9. A laser, comprising:

a) a substrate that supports optical activity, where the substrate has a top side and a bottom side;

b) an optical device on the substrate, having an active layer in which light emission is stimulated, and having a plurality of facets in at least two different orientations;

c) a means for pumping the active layer of the optical device; and

d) a user-definable number of pairs of dielectric layers on the plurality of facets in at least two different orientations, having a height below that of the active layer, where each pair of dielectric layers includes a first material deposited first and a second material deposited on the first material.

10. The laser of claim 9, wherein the substrate is selected from the group of substrates consisting of sapphire, GaAs, GaSb, InSb, InAs, InP, InSb, and quartz.

11. The laser of claim 9, wherein the substrate is selected from the group of substrates consisting of an undoped substrate, a doped substrate, a doped n+ substrate, a doped p+ substrate, and a semi-insulating substrate.

12. The laser of claim 9, wherein the optical device is selected from a group of optical devices consisting of a PN junction of direct gap semiconductors, a PIN structure with direct gap

semiconductor quantum wells, a graded index structure with direct gap semiconductor quantum wells, and Er doped glass layers.

13. The laser of claim 9, wherein the optical device is a structure selected from the group of structures consisting of a ridge, a buried heterostructure, a polygonal mesa, a ring, and a Y-junction.

14. The laser of claim 9, wherein the means for pumping the active layer of the optical device is selected from the group of means for pumping the active layer consisting of a physical contact and an optical window.

15. An optical amplifier, comprising:

a) a substrate, where the substrate has a top side and a bottom side;

b) an optical device on the substrate, having an active layer in which light emission is stimulated, and having a plurality of facets in at least two different orientations;

c) a means for pumping the active layer of the optical device; and

d) a user-definable number of single dielectric layers simultaneously formed on the plurality of facets in at least two different orientations of the optical device to a height below that of the active layer.

16. The optical amplifier of claim 15, wherein the substrate is selected from the group of substrates consisting of sapphire, GaAs, GaSb, InSb, InAs, InP, InSb, and quartz.

17. The optical amplifier of claim 15, wherein the substrate is selected from the group of substrates consisting of an undoped substrate, a doped substrate, a doped n+ substrate, a doped p+ substrate, and a semi-insulating substrate.

18. The optical amplifier of claim 15, wherein the optical device is selected from a group of optical devices consisting of a PN junction of direct gap semiconductors, a PIN structure with direct gap semiconductor quantum wells, a graded index structure with direct gap semiconductor quantum wells, and Er doped glass layers.

19. The optical amplifier of claim 15, wherein the optical device is a structure selected from the group of structures consisting of a ridge, a buried heterostructure, a polygonal mesa, a ring, and aY-junction.

20. The optical amplifier of claim 15, wherein the means for pumping the active layer of the optical device is selected from the group of means for pumping the active layer consisting of a physical contact and an optical window.